Smith & Wesson

Star-tron®
Night Vision Systems

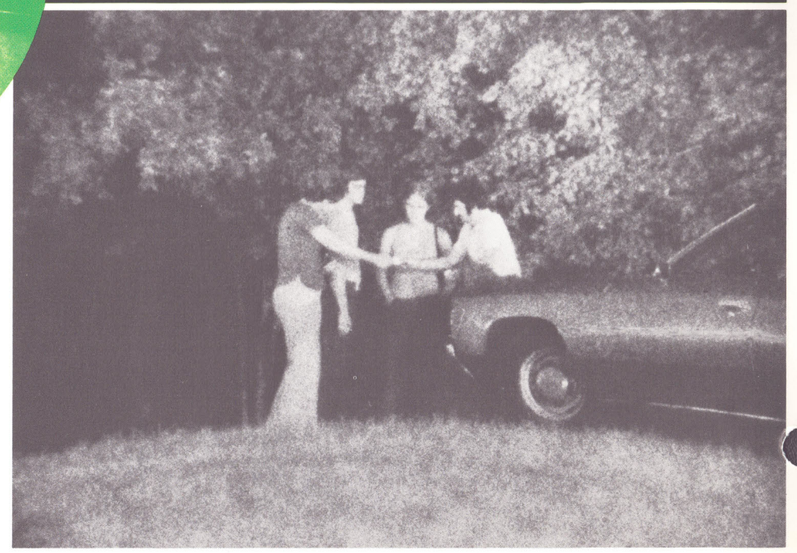
Star-tron® systems help make surveillance, apprehension and conviction simpler, safer, surer.

Star-tron equipment removes the protective shield of darkness from criminals who strike in the night. With Star-tron systems, law enforcement officers can view nighttime activities with daytime clarity. Without being seen themselves. And, in addition to visual observation, Star-tron equipment can provide detailed photographs, permanent records for identification, courtroom evidence.

A major deterrent to night crime.

When criminals know police patrols are equipped with Star-tron systems, crime rates drop. In fact, in cities where police departments have publicized their Star-tron systems, night crime has decreased 25 to 30%. And that's another good reason why your department needs Star-tron systems.

Compact, lightweight and rugged, Star-tron systems can be tripod mounted for extended surveillance activities. Hand held for use from a car or on foot patrol. Or used from helicopters and patrol boats.



Stake out. Assignment: bust the pusher. A major pusher. Ruining young lives with junk. Securely operating under the cover of darkness. But now you've got him. Star-tron systems let you watch his nighttime dealing with daytime clarity. And let you take pictures that will lead to his conviction.

In the green circle is the scene as viewed through the Star-tron MK 303A with its 135 mm. lens.

And here's the photograph taken through the same unit, as developed and printed for evidence.

Star-tron Generation 1.

Specifically designed for law enforcement, first generation Star-tron equipment has become the workhorse of the industry. Acceptance by agencies of all types has been overwhelming. *In fact, more first generation Star-tron systems are in use by major law enforcement agencies than all other systems together.*

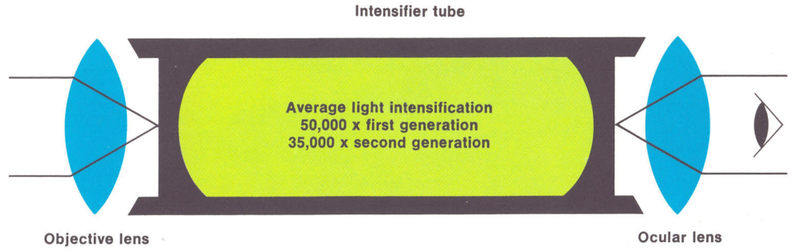
Star-tron first generation systems are still, from the cost effectiveness standpoint, the best all-round systems for most police work.

Star-tron Generation 2.

The engineers and scientists at General Ordnance, the Smith & Wesson subsidiary that manufactures Star-tron equipment in Pittsburgh, have developed second generation systems for specialized applications.

The prototype systems, first shown at Anaheim in 1971, were the first second generation night vision systems developed for law enforcement.

Pioneering in the use of new, more compact micro-channel plate intensifier units, second generation Star-tron systems are smaller in length, more compact than first generation systems.



Because they have single stage intensifiers, second generation systems have minimal distortion in terms of lines bending in, and less "flare" or "blooming" around bright light sources.

How Star-tron systems work.

Star-tron night vision equipment operates on the basic principle of light intensification. Available light, even as little as on a cloudy, moonless night, is collected by the "objective" lens. The objective lens works in much the same way as a camera lens. Many used in Star-tron systems are indeed photographic lenses. But our best lenses have been designed specifically for night vision applications. These special lenses have transmittance, contrast, and resolution characteristics exactly matched to the requirements of the intensifier tube to obtain the highest attainable level of performance.

The objective lens focuses the available light on the "intensifier tube." Within this sophisticated tube, the available light is intensified or amplified an average of 50,000 times in first generation equipment, 35,000 times in second generation equipment.

The final image, sharp, clear, and with maximum contrast, is formed on a phosphor screen and viewed through a monocular eyepiece or a television screen like biocular viewer.

Star-tron equipment is ruggedly built for long, reliable service.

Rugged, high performance, waterproof lens. Unique, 135 mm., f/1.6 lens is only half the size of other lenses with equal focal length and aperture.

Star-tron systems use single battery. Readily available, the battery provides maximum service life. All electrical contacts are gold plated for maximum electrical efficiency and resistance to corrosion, making periodic contact replacement unnecessary.

Mounting boss permits use on tripod, attachment of pistol grip. Heavy duty rifle mount available.

Automatic brightness control, which automatically adjusts to ambient light conditions, and Light Shade™ field iris are available on all models.

An anodic hardcoat, coated with a matte black plastic urethane, protects all exposed metal. Deeply knurled polymeric body covering provides sure grip for safe handling, easy focusing of lens and eyepiece.

Weatherproof biocular viewer has 58 mm. focal length, provides 4.5 x magnification, permits easy, comfortable viewing with up to 24 inches of eye relief. Three monocular eyepieces and two other biocular viewers are also available to provide varying degrees of eye relief and system magnification. Camera attachments and a biocular viewer through which photographs can be directly taken are available. Sealed, waterproof unit requires virtually no maintenance, other than occasional cleaning of lenses.

Models 303A and 323 meet MIL-STD-810B, Method 512, Procedure I. Procedure specifies submergence in three feet of water for two hours. Units show no evidence of seepage after test.

MK 303A with 135 mm, f/1.6 objective lens

Six basic Star-tron® models provide unmatched choice, versatility.

Smith & Wesson realizes that a single, universal night vision system can't meet the specific needs and applications of every department. That's why there are six different Star-tron models — and one that's just right for your application.

Star-tron Generation 1.

Model MK 101B is equipped with a "C" type lens mount. Standard equipment includes a "C" mounted, 75 mm., f/1.4 Cosmicar objective lens and a 25 mm. monocular eyepiece. Recommended where cost is a major factor and when a "C" type TV or movie camera lens mount is required. Still camera, motion picture and television attachments provide photographic capability.

Model MK 202A is equipped with a strong, Canon breechlock type lens mount. Mount provides a secure fastening from which the lens cannot be accidentally unscrewed, yet can be instantly changed. Standard equipment includes 85 mm., f/1.8 standard objective lens and 25 mm. monocular eyepiece. Still camera, motion picture and television attachments provide photographic capability. System can be used from inside a car or carried in one hand on routine patrols.

Model MK 303A is the ultimate in night vision equipment for law enforcement agencies. You don't have to baby this rugged, waterproof, versatile, all-purpose system. Image quality, resolution and contrast are unmatched. Heavy-duty design permits repeated use on rifle mounts, other high shock and vibration applications without damage to lenses or intensifier tube. MK 303A features a 135 mm., f/1.6 objective lens or a 170 mm., f/1.5 objective lens. The unique lens mount design also accepts any standard camera lens with an appropriate adapter. A 32 mm. monocular eyepiece is recommended as standard equipment. A 25 mm. eyepiece is available at no extra cost. The MK 303A can also be fitted with a range of other monocular and biocular viewers and still camera, motion picture and television attachments.

MK 101B

MK 202A

MK 303A

Specifications	MK 101B	MK 202A	MK 303A	MK 505A	MK 222	MK 323
Length — body only	6.75″	7.62″	7.12″	14.50″	4.00″	3.50″
with std. obj. lens and eyepiece	11.37″	11.75″	13.00″	21.37″	8.50″	8.00″
Weight — body only	1.56 lbs.	1.72 lbs.	2.40 lbs.	10.96 lbs.	.92 lbs.	1.37 lbs.
with std. obj. lens and eyepiece	2.94 lbs.	3.12 lbs.	4.12 lbs.	14.00 lbs.	2.28 lbs.	3.00 lbs.
Light gain — min.	35,000	35,000	35,000	45,000	Min. gain at max. control setting: 60,000. Mid gain, mid control setting: 25,000	
avg.	50,000	50,000	50,000	85,000		
Resolution — min.	36 L.P.M.*	36 L.P.M.	36 L.P.M.	36 L.P.M.	28 L.P.M.	28 L.P.M.
avg.	40 L.P.M.	40 L.P.M.	40 L.P.M.	40 L.P.M.	30 L.P.M.	30 L.P.M.

*Line pairs per millimeter.
See lens comparison and range capability charts on back cover.

Model MK 505A is Smith & Wesson's high performance, tripod mounted night vision system especially designed for surveillance and photographic use. The MK 505A features a patented "hinge back" that permits fast, easy interchange of viewer and camera — even in total darkness. With standard 135 mm., f/1.8 lens and an average light gain of 85,000, the MK 505A surveys the largest possible areas in the lowest possible light. The standard biocular viewer permits viewing from a distance of three feet. The large, 40 mm. format provides a big, clear, sharp image for accurate observation of the smallest details. Also accepts motion picture and television cameras.

Star-tron Generation 2.

Model MK 222 is Smith & Wesson's basic second generation night vision system. Strong, Canon breech-lock type lens mount provides secure fastening for lens. Other lens mounts are available. Standard model shown has 85 mm., f/1.8 lens and 32 mm. monocular eyepiece. A range of other objective lenses and both monocular and biocular viewers can be used. Still, motion picture, and television camera attachments are available for photographic work. A unique breakthrough provides the highest resolution of any second generation night vision system, enabling the compact MK 222 to outperform much bulkier devices with the 25 mm. format.

Model MK 323 is the second generation version of the most versatile night vision system designed and built for law enforcement use. Image quality, resolution and contrast are best available in second generation equipment. Rugged, waterproof, all-purpose, the MK 323 is available with either 135 mm., f/1.6 or 170 mm., f/1.5 objective lenses. Unique lens mount design, with adapter also accepts any standard camera lens. A 32 mm. monocular eyepiece is standard, A 25 mm. monocular is available at no extra cost, and a full range of other monocular and biocular viewers are available. Still, motion picture and television camera attachments are also available. The MK 323 also makes use of the unique breakthrough that permits use of the 18 mm. format.

Every Star-tron system is furnished with a rugged, custom-fitted, lightweight carrying case. Foam compartments cushion the basic Star-tron device, lens, eyepiece, cleaning supplies, batteries, etc. Cases are also available for accessory lenses, photographic attachments, viewers and film.

MK 505A

MK 222

MK 323

Attachments and accessories provide unmatched versatility

Smith & Wesson has developed a broad line of options, accessories and attachments to tailor a Star-tron night vision system to your exact needs. All may be either factory installed or ordered at a later date for field installation.

A Long term surveillance capability of MK 505A, shown mounted on heavy duty tripod, with unique "hinge back" for camera attachment and biocular viewer, is unmatched by any other system designed for law enforcement applications.

B All Star-tron systems offer photographic capabilities when used with relay lens and camera body. Shown is the MK 222 with 85 mm., f/1.8 lens. Star-tron relay lenses are the most compact available.

C MK 202A on portable television camera. All Star-tron systems are designed for use with television and motion picture cameras.

D MK 222 with 85 mm. f/1.8 objective lens mounted on Bolex 16 mm. motion picture camera. All systems may be used with motion picture cameras.

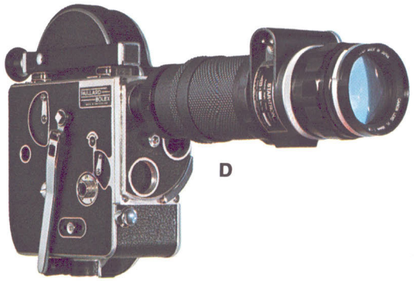
E Star-tron systems are adaptable to the widest variety of objective lenses. Shown is MK 303A body with four of the most common: "C" type, Canon, Pentax and Nikon adapters with various objective lenses.

F Mounted on high-powered rifles, the Star-tron night vision system is ideal for use in antisniper activities. Mounts are offered for MK 202A, MK 303A and MK 323 models. Unique, illuminated reticle projectors are available for 135 mm. and 170 mm. lenses, can be adjusted for reticle brightness, windage and elevation, retrofitted to existing devices.

B

F

A

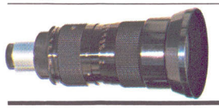


D

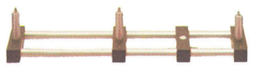
C

E

	Oculars	MODELS USED ON MK 101A	MK 202A	MK 303A	MK 505A	MK 222	MK 323
	50209 Biocular viewer, ruggedized weatherproof, of unique five element design, provides 4.5 times magnification, (permits both eye viewing of output screen at distances from 2 to 24 inches, similar to a 4″ diameter television screen. Recommended for long duration viewing and for use from moving vehicles and helicopters).	X	X	X		X	X
	50213 Biocular viewer, provides 4 times magnification, (permits both eye viewing of output screen to distances from 2 to 18 inches, similar to a 3″ diameter television screen). Can be substituted for camera attachment. Permits direct photography using the 50 mm to 60 mm normal lens of any 35 mm SLR camera — not weatherproof.	X	X	X		X	X
	50454 Biocular viewer. Lowest cost biocular viewer, provides 3.5 times magnification. Permits viewing with both eyes at distances from 2 to 15 inches.	X	X	X		X	X
	50308 25 mm focal length ocular with standard open type eyeguard. 10 times magnification. Recommended when maximum magnification is required. (Standard ocular furnished on Models MK-202A and MK-303A.)	X	X	X		X	X
	50357 32 mm focal length ocular with standard open type eyeguard. 7.8 times magnification. Gives long eye relief and best general purpose eyepiece. May be substituted for standard ocular at no additional charge if specified at time of order.	X	X	X		X	X
	50309 40 mm focal length ocular with standard open type eyeguard. 6.25 times magnification. Recommended when maximum eye relief required, such as rifle mounting. May be substituted for standard ocular at no additional charge if specified at time of order.	X	X	X		X	X
	50358 40 mm focal length ocular with secured type eyeguard. 6.25 times magnification. Recommended for rifle scope mounting.	X	X	X		X	X
	50218 Secured type eyeguard. Adapts to 25 mm, 32 mm and 40 mm oculars.	X	X	X		X	X
	50512 High magnification narrow angle ocular. (Provides a system magnification of 3.5 times with 135 mm lens.) In quick release swing type accessory mount.				X		
	50515 High magnification wide angle viewer. (Covers complete field of view and provides a system magnification of 3.8 times with 135 mm lens.) In quick release swing type accessory mount.				X		
	Objective Lenses						
	50202 85 mm f/1.8 lens — if ordered separately. (Standard with basic MK-202A unit.)		X			X	
	50501 135 mm f/1.8 lens. (Provides a system magnification of 5.4 times with 25 mm eyepiece, or 2.3 times magnification with biocular viewer.)	X‡	X	X*	X	X	X*
	50467 135 mm f/2.3 lens. (Provides a system magnification of 5.4 times with 25 mm eyepiece, or 2.3 times magnification with biocular viewer.)		X	X*	X	X	X*

Objective Lenses	MK 101A	MK 202A	MODELS USED ON MK 303A	MK 505A	MK 222	MK 323
50426 135 mm f/1.6 compact weatherproof catadioptric lens. High in performance and extremely rugged, this new unique state of the art lens permits the magnification potential of the 135 mm focal length with an overall scope length of only 11 inches. It is approximately one half the size of other lenses with equal focal length and aperture.			X			X
50427 General duty daylight filter for 135 mm f/1.6 compact catadioptric lens with captive rubber strap. (Allows unit to be operated in normal daylight for training purposes.)			X			X
Optical glass type daylight filter to allow operation in normal daylight for training purposes						
50428 For 135 mm f/1.6 catadioptric lens.			X			X
50307 For 170 mm f/1.5 catadioptric lens.			X			X
Illuminated reticle projector with self-contained power supply, gain control, windage and elevation controls.						
50453 For 135 mm f/1.6 catadioptric lens.			X			X
50455 For 170 mm f/1.5 catadioptric lens.			X			X
Special daylight filter for illuminated reticle projector.						
50482 For 135 mm f/1.6 catadioptric lens (with part 50453).			X			X
50483 For 170 mm f/1.5 catadioptric lens (with part 50455).			X			X
50303 170 mm f/1.5 weatherproof catadioptric lens. This lens delivers the highest performance available in a handheld scope. Its image quality and compactness are without equal. (Overall scope length with lens is only 13 inches.) Performance represents the limits of current technology.			X			X
50522 210 mm f/2.8 high resolution telephoto lens complete with focusing wheel and sunshade.	X‡	X	X*	X	X	X*
50523 Carrying case for 210 mm lens.		X	X	X	X	X
50435 300 mm f/4.0 compact lightweight telephoto lens complete with sunshade and case.	X‡		X	X	X	X*
50525 300 mm f/2.8 high resolution telephoto lens complete with sunshade.		X	X	X	X	X*
50281 Special mount bar for 300 mm f/2.8 lens. (Required for MK-505A.)				X		
50526 Carrying case for 300 mm f/2.8 lens.		X	X	X	X	X
50378 500 mm f/4.0 catadioptric lens complete with sunshade and case.	X‡	X	X*	X	X	X*
 50263 15 - 150 mm f/2.8 zoom lens with carrying case.	X		X†			X†

Objective Lenses	MK 101A	MK 202A	MODELS USED ON MK 303A	MK 505A	MK 222	MK 323
Adapters to allow conventional type objective lens to be used. (Weatherproof capability of MK 303A and MK 323 may be sacrificed when standard photographic lenses are used.)						
50238 "C" mount			X			X
50383 Canon mount			X			X
50484 Nikon mount			X			X
50452 Pentax mount			X			X
50589 Nikon objective mount adapter				X		
50587 Pentax objective mount adapter				X		
* Lens requires special objective lens adapter Part No. 50383 for Canon mount when used on MK-303A.						
† Lens requires special objective lens adapter Part No. 50238 for "C" mount type lenses when used on MK-303A.						
‡ Lens requires "C" mount adapter Part No. 50258.						
Photographic Attachments						
50485 Compact high performance relay lens photography attachment — less camera body. This system delivers the highest quality photos technically possible at both low light (10^{-4} footlamberts) and medium light (10^{-2} footlamberts) levels. See Note 4. Modulation transfer function for each lens is guaranteed. (See specifications.)	X	X	X		X	X
50560 Universal high performance relay lens photography attachment — less camera body. This system delivers the highest quality photos technically possible at both low light (10^{-4} footlamberts) and medium light (10^{-2} footlamberts) levels. See Note 4. Modulation transfer function for each lens is guaranteed. (See specifications.) This high performance relay lens photography attachment may be used interchangeably on all STAR-TRON models, with appropriate adapters. Price includes one adapter only, to interface with STAR-TRON model as specified with order. Spare adapters for other models may be purchased separately. See part Nos. 50240 and 50502.)	X	X	X	X	X	X
50356 Economy model relay lens photography attachment — less camera body. This system delivers satisfactory photos at most light levels. See Note 4. It is the most compact relay lens available. Places camera body at the approximate vertical plane of eyecup.	X	X	X		X	X
50245 Canon FTb single lens reflex black camera body — camera can be used with relay lenses above.	X	X	X	X	X	X
50248 Special low light level booster meter for Canon FTb camera.	X	X	X	X	X	X
50247 Canon F1 single lens reflex camera body which can be used with long eye relief finder and motor drive adaptation — camera can be used with relay lenses above.	X	X	X	X	X	X
50249 Sensitive low light level booster meter featuring illuminated controls for Canon F1 camera.	X	X	X	X	X	X
50240 Adapter ring for high performance relay lens when used on models MK-202A and MK-303A STAR-TRON.	X	X	X		X	X

Photographic Attachments	MK 101A	MK 202A	MODELS USED ON MK 303A	MK 505A	MK 222	MK 323
50502 Hinged mount adapter for high performance lens when used on Model MK-505A STAR-TRON.				X		
50215 Adjustable mount — recommended for photography application. (Permits proper balance when device is used with camera attachment.)	X	X	X		X	X
 50447 Universal brace or cradle set (Photo/TV/General Purpose). Available in 18, 24 and 30 inch lengths. Provides balance and support when special lenses or camera attachments are used. (Set consists of one pair of Part No. 50468, 40469 or 50470; plus 3 each Part No. 50472; plus one each Part No. 50473.)	X	X	X	X	X	X
Accessories for use with Part No. 50447:						
50468 Extra horizontal rod pair, length 18 inches.	X	X	X	X	X	X
50469 Extra horizontal rod pair, length 24 inches.	X	X	X	X	X	X
50470 Extra horizontal rod pair, length 30 inches.	X	X	X	X	X	X
50471 Extra cross brace.	X	X	X	X	X	X
50472 Extra vertical upright.	X	X	X	X	X	X
50473 Extra tripod mount.	X	X	X	X	X	X
50486 Slider rail.	X	X	X	X	X	X
Special infrared film illuminators for photography application will be quoted on request.	X	X	X	X	X	X
The following adapters may be ordered separately to allow other cameras to be used with Part Nos. 50560, 50356 and 50485 relay lenses:						
50256 Canon breech lock.	X	X	X	X	X	X
50257 Pentax.	X	X	X	X	X	X
50259 Nikon.	X	X	X	X	X	X
50258 "C" mount for CCTV or movie camera applications.	X	X	X	X	X	X
50405 Konica Auto Reflex T model.	X	X	X	X	X	X
50404 Minolta SR.	X	X	X	X	X	X
50409 Exakta & Topcon.	X	X	X	X	X	X
Note 4: Photography attachment including relay lens — without camera body. The camera body to be used with relay lens must be specified with order; an appropriate mount adapter will then be supplied. If body is not specified at time of order, the relay lens will be supplied with Canon breech type lens mount.						
Pistol Grip, Tripods, Special Mounts Including Rifle Mounts						
50216 Light weight tripod.	X	X	X		X	X
50590 Medium weight tripod.	X	X	X		X	X
50519 Compact heavy duty tripod with geared elevation and tilt.	X	X	X	X	X	X
50518 Heavy duty tripod with geared elevation and tilt.	X	X	X	X	X	X
50239 Pistol grip with quick release.	X	X	X		X	X
50311 Tripod adapter. (Required to mount MK-303A equipped with 170 mm f/1.5 lens on conventional tripods.)			X			X
50215 Adjustable mount — recommended for photography or pistol grip mounting. (Permits proper balance when device is used with telephoto lenses.)	X	X	X		X	X
50520 Quick release base for heavy duty tripod — recommended for MK-505A. (Permits quick and convenient attachment or removal from tripod.)				X		

Pistol Grip, Tripods, Special Mounts Including Rifle Mounts	MK 101A	MK 202A	MODELS USED ON MK 303A	MK 505A	MK 222	MK 323
50423 Car Window Mounting Bracket.	X	X	X		X	X
50359 Heavy duty MK-202A rifle mount for AR 15/M16.		X				
50361 For other rifles (Specify brand and caliber).		X				
50360 Heavy duty MK-303A rifle mount for AR 15/M16.			X			
50362 For other rifles (Specify brand and caliber).			X			
50486 Heavy duty MK-323 rifle mount for AR 15/M16 with 135 mm lens.						X
50487 For AR 15/M16 with 170 mm lens.						X
50488 Heavy duty MK-323 rifle mount for other rifles with 135 mm lens (Specify brand and caliber).						X
50489 For other rifles with 170 mm lens (Specify brand and caliber).						X
50490 Heavy duty rifle mount for AR 15/M16 with illuminated reticle projector.			X			X
50491 For other rifles (Specify brand and caliber).			X			X
50451 Wrist strap. Safety feature to protect unit from damage from accidental fall.	X	X	X		X	X
Electrical Accessories						
50431 Trigger Switch Adapter — permits on and off trigger operation when Part No. 50239 pistol grip is used.	X	X	X		X	X
50327 Gain control — recommended for use in city or other high light level applications. Improves image contrast and reduces back light from scope. Replaces standard battery cap.	X	X	X		X	X
50582 Auxiliary power supply for MK-505A. 12 volt DC.				X		
50424 For all other models.	X	X	X		X	X
50584 Cold weather adapter for MK-505A. To provide for warm, remote battery location in cold weather.				X		
50450 For all other models.	X	X	X		X	X
50505 TR-235R Mallory Battery for MK-505A.				X		
50208 TR-132 Mallory Battery for all other models and illuminated reticle projector.	X	X	X		X	X
50262 RM-625R Battery for Canon camera and booster meter.	X	X	X	X	X	X
Special Cases: Special heavy duty waterproof carrying cases and larger style cases which permit storage of STAR-TRON unit and accessories plus tripod will be quoted upon request.						

Smith & Wesson
A Bangor Punta Company
2100 Roosevelt Avenue
Springfield, Massachusetts 01101
(413) 736-0323

Lens comparison chart

Objective lens	Magnification with 25 mm eyepiece	Magnification with 37 mm eyepiece	Field of view
75 mm	3.0 x	—	12°5′
85 mm	3.4 x	—	12°
135 mm	5.4 x	3.6 x	7°40′
170 mm	6.8 x	—	6°
210 mm	8.4 x	5.7 x	5°
300 mm	12.0 x	8.0 x	3°20′
500 mm	20.0 x	13.5 x	2°

Star-tron range capabilities (at 30% target contrast)(1)(2)

Specifications	75 mm f/1.4	85 mm f/1.8	135 mm (2) f/1.6	135 mm f/1.8	170 mm (2) f/1.5	210 mm f/2.8	300 mm f/2.8	300 mm f/4.0	500 mm f/4.0
Moonlight (10-2 ft. candle)									
Man — feet	1380	1575	2280	2052	2625	2770	3870	3120	4020
— meters	420	480	695	625	800	845	1180	950	1225
Small Car — feet	1740	1968	2850	2560	3280	3450	4840	3900	5020
(Jeep) — meters	530	600	870	780	1000	1050	1475	1190	1530
Truck — feet	2425	2755	3990	3591	4592	4840	6760	5460	7020
(Tank) — meters	740	840	1215	1095	1400	1475	2060	1665	2140
Starlight (10-4 ft. candle)									
Man — feet	1040	1180	1710	1560	1968	1950	2740	2030	2540
— meters	315	360	520	475	600	595	835	620	775
Small Car — feet	1300	1470	2130	1940	2460	2440	3430	2530	3182
(Jeep) — meters	395	450	650	590	750	745	1045	770	970
Truck — feet	1820	2070	2990	2730	3510	3410	4810	3545	4460
(Tank) — meters	555	630	910	740	1070	1040	1465	1080	1360
Absolute Field of View (19 mm Photocathode Diameter)	14.4°	12.1°	8.0°	8.0°	6.4°	5.2°	3.6°	3.6°	2.2°

Note 1 These figures were determined with an object having a contrast ratio of 30%. (A contrast ratio of 100% would be a white object against a black background. 0% contrast would be black against black.) An increase in target contrast from the base 30% will extend the range capabilities of the above lenses.

Note 2 A significant improvement in the ability to see and identify target detail within the above range capability envelope is achieved with special high performance (MTF) lenses whose optical characteristics have been optimized for night vision application. Examples of such high performance lenses are our 135 mm f/1.6, 170 mm f/1.5, 300 mm f/1.8, 400 mm f/1.7 and 600 mm f/1.8. All of these lenses are normally supplied in fully waterproof and shock resistant configurations suitable for military use.

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Smith & Wesson

Star-tron®
Night Vision Systems and Accessories

EFFECTIVE JUNE 3, 1974

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05-0574-01

FIRST GENERATION STAR-TRON® NIGHT VISION PRICE LIST	DIST. PRICE	SUGGESTED LIST PRICE
MODEL MK-101B STAR-TRON® PASSIVE NIGHT VISION SCOPE complete with "C" type mount 75mm f/1.4 lens, 25mm ocular (provides magnification of 3X), fitted foam lined case, battery and lens cleaning kit. (Overall length 11⅜ inches). Equal to and or exceeding the minimum specification of other commercially available scopes with "C" mounted objective lenses.	$1,869.00	$2,670.00
Options (if ordered, must be specified at time scope is ordered):		
1. Automatic Brightness Control (ABC).	105.00	150.00
2. Light Shade™ brand field iris.	91.00	130.00
TOTAL — Complete if options 1 and 2 are specified	$2,065.00	$2,950.00
MODEL MK-202A STAR-TRON® PASSIVE NIGHT VISION SCOPE complete with 85mm f/1.8 lens, 25mm ocular (provides magnification of 3.4X) fitted foam lined case, battery and lens cleaning kit. (Overall length 11¾ inches.)	$1,974.00	$2,820.00
Options (if ordered, must be specified at time the scope is ordered):		
1. Automatic Brightness Control (ABC).	105.00	150.00
2. Light Shade™ brand field iris.	91.00	130.00
TOTAL — Complete if options 1 and 2 are specified	$2,170.00	$3,100.00
MODEL MK-303A STAR-TRON® RUGGEDIZED, WEATHERPROOF PASSIVE NIGHT VISION SCOPE equipped with 135mm f/1.6 compact and weatherproof catadioptric objective lens, 25mm ocular① providing magnification of 5.4X, fitted foam-lined case, spare batteries, and lens cleaning kit. (This new and unique state-of-art objective lens permits the magnification and visual acuity potential of the 135mm focal length with an overall scope length of only 11 inches.)	$2,324.00	$3,320.00
Options (if ordered, must be specified at time scope is ordered):		
1. Automatic Brightness Control (ABC).	105.00	150.00
2. Light Shade™ brand field iris.	91.00	130.00
TOTAL — Complete if options 1 and 2 are specified	$2,520.00	$3,600.00
MODEL MK-303A STAR-TRON® RUGGEDIZED, WEATHERPROOF PASSIVE NIGHT VISION SCOPE equipped with 170mm f/1.5 weatherproof catadioptric objective lens, 25mm ocular① providing magnification of 6.8X, fitted foam-lined case, spare batteries, and lens cleaning kit. (This objective lens delivers the best performance available in a handheld scope. Its image quality and compactness are without equal, yet overall length of the scope equipped with this lens is only 13 inches.)	$2,464.00	$3,520.00
Options (if ordered, must be specified at time scope is ordered):		
1. Automatic Brightness Control (ABC).	105.00	150.00
2. Light Shade™ brand field iris.	91.00	130.00
TOTAL — Complete if options 1 and 2 are specified	$2,660.00	$3,800.00
MODEL MK-505A STAR-TRON® PASSIVE NIGHT VISION SCOPE featuring dual quick release swing type accessory mounts. Permits interchangeable positioning of any combination of two accessories (biocular viewer, photography attachment, high magnification viewer, etc.) from a *ready* position into a *use* position. Complete with fitted foam-lined case, biocular viewer in quick release swing type accessory mount, 135mm f/1.8 lens, battery, Automatic Brightness Control (ABC), lens cleaning kit and Light Shade™ brand field iris.	$3,255.00	$4,650.00

SECOND GENERATION STAR-TRON® NIGHT VISION SYSTEMS	DIST. PRICE	SUGGESTED LIST PRICE
MODEL MK-222 STAR-TRON® SECOND GENERATION PASSIVE NIGHT VISION SCOPE complete with 85mm f/1.8 lens, 25mm ocular (provides magnification of 3.4X), fitted foam-lined case, spare batteries, wrist strap and lens cleaning kit. (overall length 8½ inches). INCLUDES: 1. Automatic Brightness Control (ABC) 2. Bright Source Protection (BSP) 3. Manual Gain Control 4. Light Shade™ brand field iris TOTAL:	$3,440.00	$4,300.00
MODEL MK-323 STAR-TRON® SECOND GENERATION RUGGEDIZED, WATERPROOF, PASSIVE NIGHT VISION SCOPE equipped with 135mm f/1.6 weatherproof catadioptric objective lens, 25mm ocular providing magnification of 5.4X, fitted foam-lined case, spare batteries, wrist strap and lens cleaning kit. (This objective lens delivers the best performance available in a hand held scope. Its image quality and compactness are without equal, yet overall length of the scope equipped with this lens is only 8 inches). INCLUDES: 1. Automatic Brightness Control (ABC) 2. Bright Source Protection (BSP) 3. Manual Gain Control TOTAL:	$3,996.00	$4,995.00
MODEL MK-323 STAR-TRON® SECOND GENERATION RUGGEDIZED, WATERPROOF, PASSIVE NIGHT VISION SCOPE equipped with 170mm f/1.5 weatherproof catadioptric objective lens, 25mm ocular providing magnification of 6.8X, fitted foam-lined case, spare batteries, wrist strap and lens cleaning kit. (This objective lens delivers the best performance available in a hand held scope. Its image quality and compactness are without equal, yet overall length of the scope equipped with this lens is only 10 inches). INCLUDES: 1. Automatic Brightness Control (ABC) 2. Bright Source Protection (BSP) 3. Manual Gain Control TOTAL:	$4156.00	$5195.00

① Note: A 32mm ocular which is most highly recommended for general purpose use may be substituted at no additional charge if specified at time of order.

Oculars	MK 101B	MK 202A	MK 303A	MK 505A	MK 222	MK 323	DIST. PRICE	SUGGESTED LIST PRICE
50209 Biocular viewer, ruggedized weatherproof, of unique five element design, provides 4.5 times magnification, (permits both eye viewing of output screen at distances from 2 to 24 inches, similar to a 4″ diameter television screen. Recommended for long duration viewing and for use from moving vehicles and helicopters).	X	X	X		X	X	$480.00	$600.00
50213 Biocular viewer, provides 4 times magnification, (permits both eye viewing of output screen to distances from 2 to 18 inches, similar to a 3″ diameter television screen). Can be substituted for camera attachment. Permits direct photography using the 50 mm to 60 mm normal lens of any 35 mm SLR camera — not weatherproof.	X	X	X		X	X	480.00	600.00
50454 Biocular viewer. Lowest cost biocular viewer, provides 3.5 times magnification. Permits viewing with both eyes at distances from 2 to 15 inches.	X	X	X		X	X	280.00	350.00
50308 25 mm focal length ocular with standard open type eyeguard. 10 times magnification. Recommended when maximum magnification is required. (Standard ocular furnished on Models MK-202A and MK-303A.)	X	X	X		X	X	118.40	148.00
50357 32 mm focal length ocular with standard open type eyeguard. 7.8 times magnification. Gives long eye relief and best general purpose eyepiece. May be substituted for standard ocular at no additional charge if specified at time of order.	X	X	X		X	X	118.40	148.00
50309 40 mm focal length ocular with standard open type eyeguard. 6.25 times magnification. Recommended when maximum eye relief required, such as rifle mounting. May be substituted for standard ocular at no additional charge if specified at time of order.	X	X	X		X	X	118.40	148.00
50358 40 mm focal length ocular with secured type eyeguard. 6.25 times magnification. Recommended for rifle scope mounting.	X	X	X		X	X	139.96	174.95
50218 Secured type eyeguard. Adapts to 25 mm, 32 mm and 40 mm oculars.	X	X	X		X	X	21.97	25.85
50512 High magnification narrow angle ocular. (Provides a system magnification of 3.5 times with 135 mm lens.) In quick release swing type accessory mount.				X			127.50	150.00
50515 High magnification wide angle viewer. (Covers complete field of view and provides a system magnification of 3.8 times with 135 mm lens.) In quick release swing type accessory mount.				X			527.00	620.00
Objective Lenses								
50202 85 mm f/1.8 lens — if ordered separately. (Standard with basic MK-202A and MK-222 units.)		X			X		$116.00	$145.00
50501 135 mm f/1.8 lens. (Provides a system magnification of 5.4 times with 25 mm eyepiece, or 2.3 times magnification with biocular viewer.)	X‡	X	X*	X	X	X*	180.00	240.00
50467 135 mm f/2.3 lens. (Provides a system magnification of 5.4 times with 25 mm eyepiece, or 2.3 times magnification with biocular viewer.)		X	X*	X	X	X*	143.60	179.50

Objective Lenses	MK 101B	MK 202A	MK 303A	MK 505A	MK 222	MK 323	DIST. PRICE	SUGGESTED LIST PRICE
50426 135 mm f/1.6 compact weatherproof catadioptric lens. High in performance and extremely rugged, this new unique state of the art lens permits the magnification potential of the 135 mm focal length with an overall scope length of only 11 inches. It is approximately one half the size of other lenses with equal focal length and aperture.			X			X	$360.00	$450.00
50427 General duty daylight filter for 135 mm f/1.6 compact catadioptric lens with captive rubber strap. (Allows unit to be operated in normal daylight for training purposes.)			X				Prices quoted on Request	
Optical glass type daylight filter to allow operation in normal daylight for training purposes								
50428 For 135 mm f/1.6 catadioptric lens.			X			X	28.80	36.00
50307 For 170 mm f/1.5 catadioptric lens.			X			X	33.60	42.00
Illuminated reticle projector with self-contained power supply, gain control, windage and elevation controls.								
50453 For 135 mm f/1.6 catadioptric lens.			X			X	573.75	675.00
50455 For 170 mm f/1.5 catadioptric lens.			X			X	573.75	675.00
Special daylight filter for illuminated reticle projector.								
50482 For 135 mm f/1.6 catadioptric lens (with part 50453).			X			X	35.70	42.00
50483 For 170 mm f/1.5 catadioptric lens (with part 50455).			X			X	35.70	42.00
50303 170 mm f/1.5 weatherproof catadioptric lens. This lens delivers the highest performance available in a handheld scope. Its image quality and compactness are without equal. (Overall scope length with lens is only 13 inches.) Performance represents the limits of current technology.			X			X	520.00	650.00
50522 210 mm f/2.8 high resolution telephoto lens complete with focusing wheel and sunshade.	X‡	X	X*	X	X	X*	588.00	735.00
50523 Carrying case for 210 mm lens.		X	X	X	X	X	63.20	79.00
50435 300 mm f/4.0 compact lightweight telephoto lens complete with sunshade and case.	X‡		X	X	X	X*	157.25	185.00
50525 300 mm f/2.8 high resolution telephoto lens complete with sunshade.		X	X	X	X	X*	798.40	998.00
50281 Special mount bar for 300 mm f/2.8 lens. (Required for MK-505A.)				X			120.00	150.00
50526 Carrying case for 300 mm f/2.8 lens.		X	X	X	X	X	48.00	60.00
50615 300 mm f/1.8 compact weatherproof high performance catadioptric lens was developed specifically for use on MK-303A and MK-323A, with characteristics optimized for night vision. Overall length 7″. When installed on MK-303A, overall length only 14½″. When installed on MK-323, overall length only 10-15/16″. Weight of lens is 5½ lbs. Highly recommended for stake-out and photography.			X			X	1,139.00	1,340.00
50263 15 - 150 mm f/2.8 zoom lens with carrying case.	X		X†			X†	633.25	745.00

Objective Lenses	MK 101B	MK- 202A	MK 303A	MK 505A	MK 222	MK 323	DIST. PRICE	SUGGESTED LIST PRICE
Adapters to allow conventional type objective lens to be used. (Weatherproof capability of MK 303A and MK 323 may be sacrificed when standard photographic lenses are used.)								
50238 "C" mount			X			X	$ 58.22	$ 68.50
50383 Canon mount			X			X	62.90	74.00
50484 Nikon mount			X			X	102.00	120.00
50452 Pentax mount			X			X	102.00	120.00
50589 Nikon objective mount adapter				X			191.25	225.00
50587 Pentax objective mount adapter				X			191.25	225.00
* Lens requires special objective lens adapter Part No. 50383 for Canon mount when used on MK-303A.								
† Lens requires special objective lens adapter Part No. 50238 for "C" mount type lenses when used on MK-303A.								
‡ Lens requires "C" mount adapter Part No. 50258.								
Photographic Attachments								
50485 Compact high performance relay lens photography attachment — less camera body. This system delivers the highest quality photos technically possible at both low light (10^{-4} footlamberts) and medium light (10^{-2} footlamberts) levels. See Note 4. Modulation transfer function for each lens is guaranteed. (See specifications.)	X	X	X		X	X	935.00	1,100.00
50560 Universal high performance relay lens photography attachment — less camera body. This system delivers the highest quality photos technically possible at both low light (10^{-4} footlamberts) and medium light (10^{-2} footlamberts) levels. See Note 4. Modulation transfer function for each lens is guaranteed. (See specifications.) This high performance relay lens photography attachment may be used interchangeably on all STAR-TRON models, with appropriate adapters. Price includes one adapter only, to interface with STAR-TRON model as specified with order. Spare adapters for other models may be purchased separately. See part Nos. 50240 and 50502.)	X	X	X	X	X	X	935.00	1,100.00
50356 Economy model relay lens photography attachment — less camera body. This system delivers satisfactory photos at most light levels. See Note 4. It is the most compact relay lens available. Places camera body at the approximate vertical plane of eyecup.	X	X	X		X	X	198.40	248.00
50245 Canon FTb single lens reflex black camera body — camera can be used with relay lenses above.	X	X	X	X	X	X	235.45	277.00
50248 Special low light level booster meter for Canon FTb camera.	X	X	X	X	X	X	56.10	66.00
50247 Canon F1 single lens reflex camera body which can be used with long eye relief finder and motor drive adaptation — camera can be used with relay lenses above.	X	X	X	X	X	X	412.25	485.00
50249 Sensitive low light level booster meter featuring illuminated controls for Canon F1 camera.	X	X	X	X	X	X	210.80	248.00
50240 Adapter ring for high performance relay lens when used on models MK-202A and MK-303A STAR-TRON.	X	X	X		X	X	42.50	50.00

Photographic Attachments	MK 101B	MK 202A	MK 303A	MK 505A	MK 222	MK 323	DIST. PRICE	SUGGESTED LIST PRICE
50502 Hinged mount adapter for high performance lens when used on Model MK-505A STAR-TRON.				X			$ 42.50	$50.00
50215 Adjustable mount — recommended for photography application. (Permits proper balance when device is used with camera attachment.)	X	X	X		X	X	20.80	26.00
50447 Universal brace or cradle set (Photo/TV/General Purpose). Available in 18, 24 and 30 inch lengths. Provides balance and support when special lenses or camera attachments are used. (Set consists of one pair of Part No. 50468, 40469 or 50470; plus 3 each Part No. 50472; plus one each Part No. 50473.)	X	X	X	X	X	X	127.50	150.00
Accessories for use with Part No. 50447:								
50468 Extra horizontal rod pair, length 18 inches.	X	X	X	X	X	X	22.95	27.00
50469 Extra horizontal rod pair, length 24 inches.	X	X	X	X	X	X	24.23	28.50
50470 Extra horizontal rod pair, length 30 inches.	X	X	X	X	X	X	25.50	30.00
50471 Extra cross brace.	X	X	X	X	X	X	15.17	17.85
50472 Extra vertical upright.	X	X	X	X	X	X	8.46	9.95
50473 Extra tripod mount.	X	X	X	X	X	X	18.70	22.00
50486 Slider rail.	X	X	X	X	X	X	32.30	38.00
Special infrared film illuminators for photography application will be quoted on request.	X	X	X	X	X	X		
The following adapters may be ordered separately to allow other cameras to be used with Part Nos. 50560, 50356 and 50485 relay lenses:								
50256 Canon breech lock.	X	X	X	X	X	X	6.80	8.00
50257 Pentax.	X	X	X	X	X	X	6.80	8.00
50259 Nikon.	X	X	X	X	X	X	6.80	8.00
50258 "C" mount for CCTV or movie camera applications.	X	X	X	X	X	X	10.20	12.00
50405 Konica Auto Reflex T model.	X	X	X	X	X	X	7.65	9.00
50404 Minolta SR.	X	X	X	X	X	X	6.80	8.00
50409 Exakta & Topcon.	X	X	X	X	X	X	6.80	8.00
Note 4: Photography attachment including relay lens — without camera body. The camera body to be used with relay lens must be specified with order; an appropriate mount adapter will then be supplied. If body is not specified at time of order, the relay lens will be supplied with Canon breech type lens mount.								
Pistol Grip, Tripods, Special Mounts Including Rifle Mounts								
50216 Light weight tripod.	X	X	X		X	X	25.88	34.50
50590 Medium weight tripod.	X	X	X		X	X	68.00	85.00
50519 Compact heavy duty tripod with geared elevation and tilt.	X	X	X	X	X	X	135.00	180.00
50518 Heavy duty tripod with geared elevation and tilt.	X	X	X	X	X	X	129.71	172.95
50239 Pistol grip with quick release.	X	X	X		X	X	23.88	29.85
50311 Tripod adapter. (Required to mount MK-303A equipped with 170 mm f/1.5 lens on conventional tripods.)			X			X	20.00	25.00
50215 Adjustable mount — recommended for photography or pistol grip mounting. (Permits proper balance when device is used with telephoto lenses.)	X	X	X		X	X	20.80	26.00
50520 Quick release base for heavy duty tripod — recommended for MK-505A. (Permits quick and convenient attachment or removal from tripod.)				X			12.71	14.95

STAR-TRON ACCESSORIES

Pistol Grip, Tripods, Special Mounts Including Rifle Mounts	MODELS USED ON MK 101B	MK 202A	MK 303A	MK 505A	MK 222	MK 323	DIST. PRICE	SUGGESTED LIST PRICE
50423 Car Window Mounting Bracket.	X	X	X		X	X	$ 15.60	$ 19.95
50359 Heavy duty MK-202A rifle mount for AR 15/M16.		X					170.00	200.00
50361 For other rifles (Specify brand and caliber).		X					Prices quoted on Request	
50360 Heavy duty MK-303A rifle mount for AR 15/M16.			X				170.00	200.00
50362 For other rifles (Specify brand and caliber).			X				Prices quoted on Request	
50486 Heavy duty MK-323 rifle mount for AR 15/M16 with 135 mm lens.						X	Prices quoted on Request	
50487 For AR 15/M16 with 170 mm lens.						X	Prices quoted on Request	
50488 Heavy duty MK-323 rifle mount for other rifles with 135 mm lens (Specify brand and caliber).						X	Prices quoted on Request	
50489 For other rifles with 170 mm lens (Specify brand and caliber).						X	Prices quoted on Request	
50490 Heavy duty rifle mount for AR 15/M16 with illuminated reticle projector.			X			X	Prices quoted on Request	
50491 For other rifles (Specify brand and caliber).			X			X	Prices quoted on Request	
50451 Wrist strap. Safety feature to protect unit from damage from accidental fall.	X	X	X		X	X	2.00	2.50
Electrical Accessories								
50431 Trigger Switch Adapter — permits on and off trigger operation when Part No. 50239 pistol grip is used.	X	X	X		X	X	$ 31.20	$ 39.00
50327 Gain control — recommended for use in city or other high light level applications. Improves image contrast and reduces back light from scope. Replaces standard battery cap.	X	X	X		X	X	72.89	85.75
50582 Auxiliary power supply for MK-505A. 12 volt DC.				X			208.25	245.00
50424 For all other models.	X	X	X		X	X	208.25	245.00
50584 Cold weather adapter for MK-505A. To provide for warm, remote battery location in cold weather.				X			268.20	298.00
50450 For all other models.	X	X	X		X	X	268.20	298.00
50505 TR-235R Mallory Battery for MK-505A.				X			4.50	5.00
50208 TR-132 Mallory Battery for all other models and illuminated reticle projector.	X	X	X		X	X	1.15	1.27
50262 RM-625R Battery for Canon camera and booster meter.	X	X	X	X	X	X	1.00	1.12
Special Cases: Special heavy duty waterproof carrying cases and larger style cases which permit storage of STAR-TRON unit and accessories plus tripod.							Prices quoted on Request	